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ABSTRACT

In October 1992, California's San Juan College was awarded a Title III grant to implement three technology-based initiatives. The first two activities involved the use of a computer lab to increase the basic skills of at-risk students and the use of a multimedia, interactive computer lab to support the foreign language curriculum. The third activity is an ongoing staff development program utilizing multimedia equipment to help faculty integrate new technology into the classroom. The full-time, full-service, development program is operated by the college's Instructional Computing Resource Center (ICRC), and stipends and release time are provided for summer and academic year courses. The courses focus on teaching faculty to create and present multimedia programs and to control interactive tutorial instruction. The program has had considerable impact on curricula and instruction at the college, with the new technology improving access, the effectiveness of instruction, and the ability to address different student learning styles. Moreover, the primary teaching methodology has shifted from the traditional lecture method to more dynamic, interactive processes. To help faculty put the training into practice, the college developed mobile multimedia computer and presentation systems and contracted with a local architectural firm to construct a new building. The building will house 10 classrooms, four of which will be multimedia enhanced, and a computer commons area for students. Floor plans of the new building are attached. (HAA)

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"BITS, BYTES, and BRICKS...
The Impact of Technology on Classroom Architecture"

Presented at

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Bits, Bytes, and Bricks....The Impact of Technology on Classroom Architecture

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Presented at the League for Innovation Conference
November 13-16, 1996

Script

A Title III Strengthening Institutions Grant was awarded to San Juan College in October 1992. Three major activities, all utilizing technology, comprised the grant; Student Success, Foreign Language, and Staff Development.

The Student Success activity involves a Model for At-Risk Students. The model focuses on a student computer lab to increase basic skills. Invest software, an adult based interactive package, is the primary learning tool. The lab is staffed by caring individuals who work with students in a one-on-one manner. Feedback is positive and faculty are finding the lab an excellent support facility.

The second activity, Program Development in Foreign Language, also utilizes technology in a multimedia, interactive computer lab to support the curriculum. San Juan College philosophy supports the teaching of language to be one of a holistic nature. Utilizing multimedia, students are able to experience language and culture. Positive results are found in the increasing number of students who are enrolling in foreign classes.

The staff development program for faculty at San Juan College, the last grant activity, represents a fresh direction and uses multimedia computer technology to equip its faculty for the 21st century.

The Instructional Computing Resource Center (ICRC) operates a full-time, full-service, staff development program for faculty and provides the college with a framework for investigation into, experimentation with, and integration of technology into the classroom.

Virtually all of the faculty at the college are being affected by the activities of the ICRC. The ICRC employs two training tracks: a 256-clock-hour summer course and a 500-clock-hour academic year course. During the summer track, four faculty are paid an hourly stipend to attend , and during the academic year, five faculty receive 40% release time to participate in the program. Once the process is complete, nearly all of the college's full-time faculty will receive the training in the "high-tech, high-touch" environment of the ICRC.

The ICRC has already effected a fundamental change in the way teachers teach and students learn at San Juan College. During the faculty training program, faculty become students themselves as they learn how to utilize various types of computer technology. Faculty are trained to store, control, and present "multimedia" programs combining text, video, graphics, sound, and animation. They also learn how to use a computer to control interactive tutorial instruction in tandem with videodisc and CD-ROM players. The creation of a capacity for multimedia presentations is moving computer-assisted instruction from the lab setting, where it has been at home for many years, into the classrooms at San Juan College.

The impact on curriculum and instruction has already been extensive. Technology in the classroom has improved access to resources, brought about effective and efficient delivery of instruction, addressed various student learning styles, enabled distance learning, and increased the interest of students. The primary teaching methodology of faculty is being transformed from the traditional "lecture and listen" to a more dynamic interactive process. As a result of the training, a faculty member becomes a facilitator of learning rather than the "fount of knowledge." The ICRC represents San Juan College's commitment to providing current technology, coordinating lesson planning, and producing multimedia presentations for use in the classroom. An outstanding example of a technological innovation spawned by the program is an American history class in which the textbook is a CD-ROM disc. Another example of particular interest is the

development of vivid Navajo-language-based materials which promote greater cultural and ethnic awareness at the college and in the community.

An unexpected benefit of the use of technology in the classroom has been the overflow of its use in the computer laboratory setting. While the primary emphasis of the program has been on enabling faculty to enhance classroom presentations, the materials that they have developed have facilitated the creation of outstanding CAI tutorial materials. These materials, which are available to students at 250 computer stations on campus, provide for unlimited review, additional exploration, and in-depth investigation of subject matter for which class time alone is not sufficient.

Another beneficial aspect of the faculty development program at San Juan College is evident from the on-going change in teaching effectiveness and sustained faculty commitment to professional development that is occurring at the college. After the training period, San Juan College faculty return to the classroom with a higher level of motivation and enthusiasm for teaching. New teaching methods utilizing multimedia and other technology have created an environment of excitement for faculty. Faculty are supported by the Instructional Computing Resource Center and its staff after they leave the training program. As new technology is brought on the campus, previous faculty trainees are invited back for "What's New" workshops and seminars. As faculty graduates of the program use technology in the classroom in innovative ways, they become facilitators to other members of their departments, causing an infusion of technology campus-wide.

There has also been evidence of three major effects of the faculty computer training program on student learning. By introducing technology into the learning environment, learning has become more student-centered and interactive. Computers and software in the classroom have contributed to student motivation, as well as an increase in student self-confidence, especially when the technology allows learners the ability to control their own learning. Greater student cooperation and collaboration have occurred when students have used technological innovations in working together toward accomplishment of course objectives.

To enable faculty to incorporate technology into their classrooms a mobile presentation station was designed. "COWs" or "Computer On Wheels" are all-in-one multimedia computer and presentation systems. A COW's

standard equipment includes a computer with CD-ROM drive, laserdisc player, audio speakers, projection system, and Zip drive all on a movable cart with heavy duty wheels. Variations of the mobile system have cropped up due to specific projection needs and equipment desired by faculty. These systems have been dubbed as "CALFs" to keep in line with the metaphor. As handy as the COWs have been in getting the technology into classroom presentations, they have not been without their limitations. The inconvenience of moving the COW from classroom to classroom within the limited time between classes have faculty complaining about dragging COWs around. Also, faculty have dealt with the problems of wires coming loose as the cart is moved contributing to frustrations when trying to present. Include the associated problems of faculty wanting to control lighting, sound and soundproofing all present problems for classrooms not built for technology.

San Juan College has been fortunate in having the means to establish an outstanding faculty training program. By next summer (1997), over 50 of the college's full-time faculty will have received extensive training in the use of the latest multimedia instructional equipment and software. They have all devoted literally hundreds of hours to learning how to incorporate what they have learned into their classrooms. In doing so, however, they have found that they are using the latest teaching techniques in classrooms whose architecture reflects the teaching/learning environment of yesteryear, not the environment of tomorrow.

Just as the college's Instructional Computing Resource Center came into its own at San Juan College, we had the opportunity to design a brand-new classroom addition. It did not take us long to realize that this presented a unique opportunity for the college to build classrooms specifically designed to take advantage of the equipment, materials, and training in which the college has been investing for the past four years.

In response to this opportunity, the college took the following important steps.

- The college employed a local architectural firm, Greer and Associates, to begin designing the new building.

- The college called upon Ann Degner to work with current and past faculty trainees of the instructional computing resource center to generate ideas about the features that faculty would like to see in the new building.

- Under the direction of the Dr. John Neibling, vice president for instruction, the college formed a faculty steering committee to evaluate the ideas generated from the faculty at large and give advice to the administration as to the final plan for the building.

This process took several months to be completed and resulted in the floor plan that is displayed on the screen now.

The floor plan that you see on the screen represents approximately 18,000 square feet of space for 10 classrooms and a common area for students. For the moment, I'd like to focus your attention on the two sets of four rooms that are to become the college's premier multimedia classrooms.

The training that our faculty have received at the ICRC has made them capable of using a vast array of instructional computing options. They can use laser disks, CD-ROM disks, digital cameras, video visualizers, VCR's, and audio tapes, just to name a few. They also have mastered the software needed to operate the equipment that integrates all of these utilities into their lessons. In essence, they have learned to enhance their classroom presentations with every form of available instructional computing technology. To this point, they have had to do it with the "cows" that David described. In order for them to employ all of the "bells and whistles" they have learned how to use, we knew we had to build a different kind of room for them.

Let's take a look now at the floor plan of the new classroom we are building. If you look closely at the design of this room, it is essentially a little theater, rectangular in shape but with a "teaching trapezoid" at the front. It has three presentation areas for the display of images. One of the areas is a combination screen and whiteboard, where images can be displayed and writing can be done. One of the surfaces is used to display images from a ceiling-mounted three-gun projector. Another may be used for an electronic whiteboard if we need to use the classroom as a distance learning room.

You will also notice that the room has no windows. Here is where the academicians and the architect disagreed. Although the architect wanted to install windows for aesthetic reasons, the faculty wanted total control of the learning environment.

Speaking of total control, the entire learning environment is controlled by the faculty member with either a touch screen apparatus or a mouse which they can use to simply "point and click" to call any teacher utility into play. The sound system is built into the ceiling, providing equally good acoustics for students no matter where they are sitting. The lighting - an innovative, adjustable fluorescent system - allows the teacher to create the exact level of lighting to achieve the most desirable instructional effect. The "teaching trapezoid" is built with a false floor to allow maximum flexibility for the positioning of the teacher control area, guaranteeing that the teacher is truly in control of the classroom environment.

Let's pause just a moment to take a 3D tour of the room which was prepared by the architect. As it loops several times, you can start to get a feel for the room both from the teacher's and the student's point of view. We anticipate that these "little theaters" will have tiered seating for the students in order to provide the best possible viewing of the display areas in the front of the room. The rooms have been dimensioned so that there are no bad angles, even from the back row, corner seats. An earlier design had not taken all of the viewing angles into consideration and had to be discarded when a prototype was loosely constructed and evaluated by the faculty steering committee.

I would like to emphasize that the input of the faculty committee was invaluable in the design phase of this project. Besides being able to draw upon their own teaching experience, members of the committee were sent to other campuses in order to see what other colleges were doing with new classrooms. Based on their experience and observation, the faculty were able to provide excellent advice throughout the process, and the design of the classrooms is really a product of their imagination and ideas.

Faculty input was not limited to the shape and size of the room. They also provided valuable insights into the type of sound and lighting systems that maximize student learning. Even the placement of the doors and light switches were matters of discussion as the project took shape. Once all of

the input was gathered, several administrators and the architect worked for several months before settling on the room's exact design, resulting in a high level of faculty "buy-in" when the construction actually began.

The college turned over the first shovel of dirt on October 1, and, as you can see by the slide, the project is underway. We anticipate an opening date of August, 1997.

In addition to the "little theaters" in which our faculty will be teaching "stars," we are also building a new laboratory classroom which will be equipped with 30 computers, networked with classroom management software. The teacher's station in this room will allow the teacher to isolate each student machine and to interact with each student or groups of students as desired. It will essentially be a teacher-student network, in which computers will be the medium of communication. The room may be used either as a large classroom with all 30 computers or as two smaller classrooms of 15 computers each, depending on the nature of the class activity that the teacher has in mind.

Moving on into the "computer commons" area of the building, the college has tried to create an area in which students can work in small groups or individually at college-owned computers or, in the near future, at their own laptops. In this area, we envision "docking stations" at which users will be able to tap in to the college's main computer system to work on assignments, utilize printing and other ancillary services, and communicate with teachers and other students.

Below this floor of classrooms, the college has shelled an extra 16,000 square feet of space for its next phase of high-tech classrooms. One of the on-going frustrations of trying to stay on top of the classroom environment today is the unbelievable rate of obsolescence of instructional technology. We know that as soon as we purchase the hardware for these classrooms, it will be obsolete. Therefore, we are putting off the purchasing date for all of the equipment until the last minute, and we are creating the shelled area so that we will have new space coming on line for the next several years as the technology changes.

In closing, let me just say a few words about the cost of the construction. As a college president, one of my major concerns is the rising cost of

constructing new buildings. This multimedia classroom wing is no exception. When it is completely finished, the building will have cost approximately $4 million, including an allowance for equipment which may or may not be totally sufficient. Needless to say, building public buildings today is not for the faint-hearted.

Many articles have been written and programs have been presented about the "classroom of tomorrow." What we have been able to accomplish at San Juan College may not be the answer for everybody. However, we believe that these new classrooms will be second to none in providing our faculty members with the latest in instructional technology in an environment designed with the teaching/learning process as the primary design criterion.

I think we are all aware of how important it is that community colleges maintain their reputation as the premiere teaching institutions in the world. With that in mind, let me close with one of my favorite sayings.

"Every morning in Africa, a lion wakes up knowing it must outrun the slowest gazelle or it will starve. The gazelle wakes up knowing it must outrun the fastest lion or it will die. So it doesn't matter whether you are a lion or a gazelle, you'd better wake up running."

"BITS, BYTES, and BRICKS... The Impact of Technology on Classroom Architecture"

San Juan College

Title III Grant Summary

- Student Success Model for At-Risk Students
- Program Development in Foreign Language
- Faculty Development

Computing Resource Center

- Absolutely Essential
- Training Center
- Expert Assistance
- Faculty Only

Faculty Training Program

- Two tracks
  - 250 Hours \ Summer \ 4 Faculty \ Stipend
  - 500 Hours \ Academic Yr \ 8 Faculty \ Release Time
- 55/66 Trained Faculty
- One-on-One \ Practice Time

Faculty Training Plan

- Computer Literacy
  - Hardware Familiarity
  - E-Mail \ Internet
  - Library System
  - Advisor System
  - Windows and Desktop Interface

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Faculty Training Plan

- Teacher Utilities
  - Gradebook Management
  - Test Production \ On-line Quiz
  - Wordprocessing
  - Inventory and Budgets

Faculty Training Plan

- Presentation/Lecture Production
  - Equipment Usage
    - Scanner, CD-ROM, Laserdisc, Camera, LCD Panel \ Projector \ Video Visualizer
  - Presentation Software
  - Teaching Methodology

Faculty Training Plan

- Review of Specific Discipline Software
  - Catalog Descriptions
  - Evaluate
  - Lesson Development

Faculty Training Plan

- Skill Building with Authoring Software
  - Screen Design and Templates
  - Interactive \ Sound and Video

Results

- Motivated and Excited Teachers
- Better Prepared Teachers
- Student / Faculty Collaboration
- Computer Labs Full
- Student Success Increasing

Key Changes

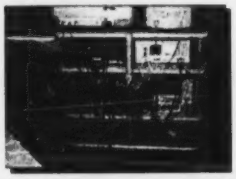
- Training is Provided
- How Teachers Teach with Technology
  - Lecture
  - Tutorial
  - Remediation
- Design of Classrooms

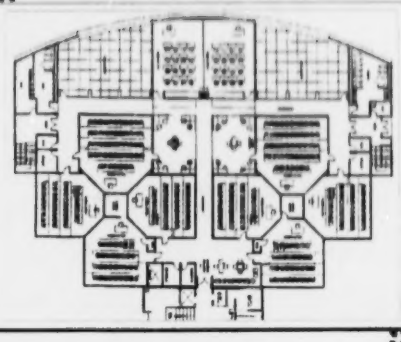
Computer On Wheels (COW)

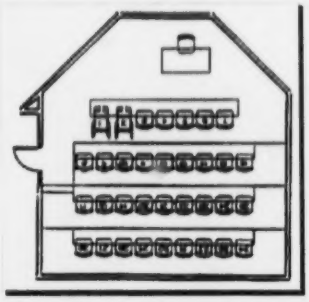
CALF

CALF

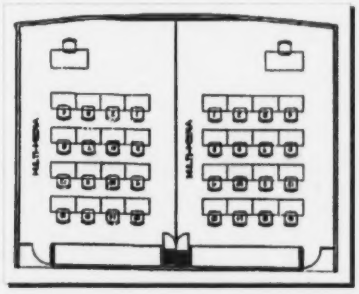
Computer On Wheels (COW)

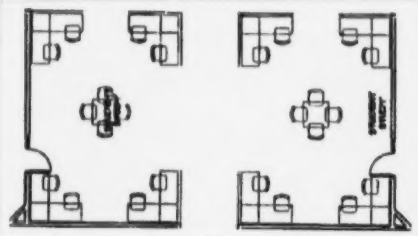


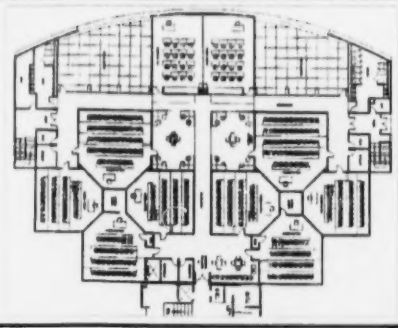




Ground Breaking - October 1, 1996







The End

Thank You!